

APPENDIX E:
EVALUATION OF ALTERNATIVE PARKING LOT
SITING OPTIONS FOR THE CENTER FOR NANOSCALE MATERIALS

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The Center for Nanoscale Materials (CNM) facility will require parking for approximately 100 vehicles. Four possible sites (Figure E.1) were considered in detail for this environmental assessment. This appendix describes the selection of the four alternative sites and the characteristics of each.

The proposed site for the main parking lot is immediately north of the proposed CNM facility southeast of the corner of Kearny and Rock Roads (Site 4 in Figure E.1). This area drains to the north into Wetland 302. Because of the sensitivity of this wetland to drainage and the designation of this wetland for mitigation purposes for other Argonne activities, alternative parking lot locations and parking design were considered.

Alternative sites examined included areas west of Kearney Road and areas south of the proposed CNM facility (Figure E.1). Sites 1 and 2 would both drain to the south. These sites are representative on any number of potential locations in this area. Site 3 is west of Kearney Road. Alternative design features considered include a two-tiered parking structure for Sites 1 and 2. Alternative drainage systems for Sites 3 and 4 include (1) drainage north into Wetland 302 or (2) collecting contaminated runoff from the parking lot and pumping the collected water south across Bluff Road and the southern ANL-E boundary. An alternative drainage system examined for Site 4 also included the incorporation of bioswales in parking lot design.

Table E.1 summarizes the features of these alternatives, and Table E.2 summarizes their environmental characteristics.

Site 1 would be somewhere south of the CNM and north of Bluff Road. It would be located to avoid locations of potential future development. Site 1 would drain to the south, following the natural slope. The site is situated such that stormwater runoff would travel through grassy areas before crossing the ANL-E fence line into Waterfall Glen Forest Preserve. The ANL-E NPDES permit would need to be modified for discharge of stormwater from an industrial facility. Traffic to Site 1 would be routed along Kearney Road on the west side of the CNM building. Parking lot No. 1 is far from the CNM facility; the occupants of LOM 437 and the CNM would need to walk $\frac{1}{4}$ to $\frac{1}{2}$ mile to reach the nearest parking sites, and up to 3,000 ft (915 m) of new walkways would be required. Two different design options were considered for Site 1. Option A would be for an open asphalt parking lot of 37,000 ft² (3,440 m²). Option B would be for a two-tiered or multi-tiered parking lot that would serve the CNM and future development in the area. The footprint of such a facility would be 28,000 ft² (2,600 m²).

Site 2 would be similar to Site 1, but located immediately south of the proposed CNM facility. A parking lot at Site 2 would be in an area of potential future development. Because of this conflict, Site 2 was not considered further in the EA.

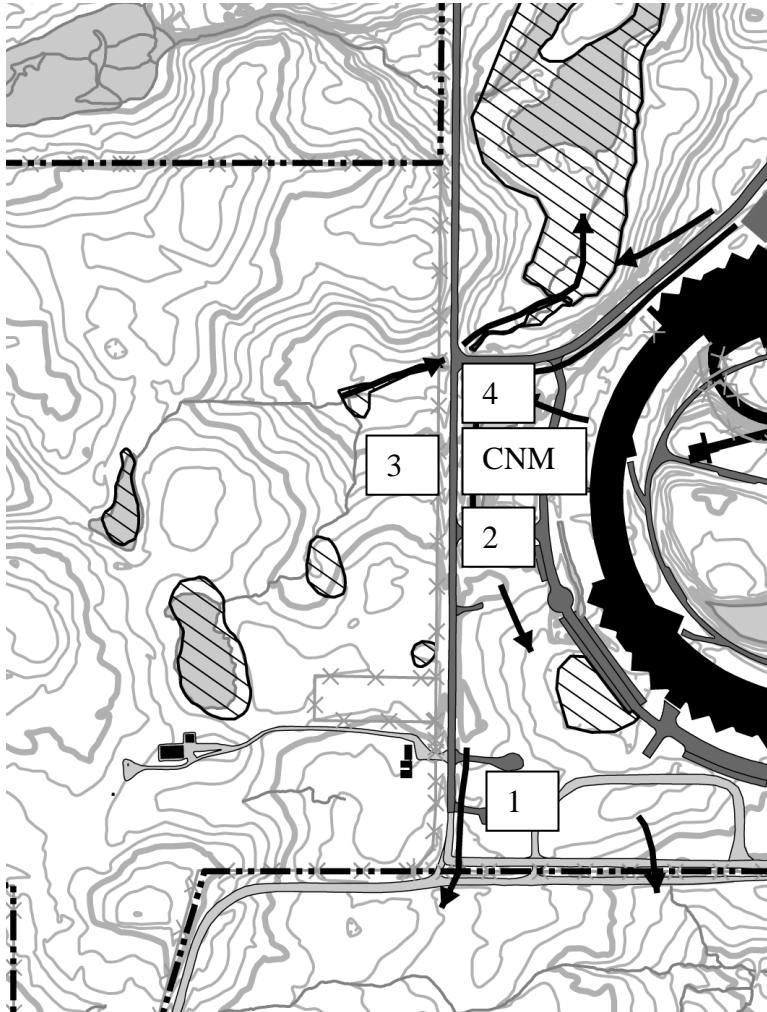


FIGURE E.1 Alternative Parking Lot Sites

Site 3 would be located west of the CNM across Kearney Road. This area is designated in ANL-E plans as being a potential site for future development. Drainage from the location could either flow north into Wetland 302 following existing drainage patterns, or the drainage could be collected and pumped south to drain across the southern Argonne boundary. This location is in an area of wet soils that may not support parking lot construction without additional filling. In addition, it is an area adjacent to designated wetlands and cultural resources. Issues related to site drainage are essentially comparable to similar issues with Site 4. This site is not evaluated in detail the EA because of concerns about wetlands, cultural resources, and soil characteristics, as well as conflict with future development.

For Sites 1, 2, and 3, an additional 16,000 ft² (150 m²) of handicapped and VIP parking would be still be provided at the CNM entrance.

TABLE E.1 Parking Lot Alternatives

Site	Location	Drainage	Other Considerations
1	Southwest corner of APS site (Kearney and Bluff Roads)	<ul style="list-style-type: none"> Storm water runoff drains to south. Tiered parking lot could be constructed. 	<ul style="list-style-type: none"> Location of potential future development can be avoided. Parking lot location is up to ¼ to ½ mile from CNM and LOM 437 This option would require construction of up to 3,000 ft² of additional walkways.
2	West of LOM 436 (along Kearney Road, south of the CNM site)	<ul style="list-style-type: none"> Storm water runoff drains to south 	<ul style="list-style-type: none"> Location of potential future development. Site is near the CNM, but at the back of the building.
3	West of Kearny Road and CNM building	<ul style="list-style-type: none"> Stormwater runoff drains to the north. Stormwater runoff could be pumped to the south. 	<ul style="list-style-type: none"> Soil condition unfavorable for parking lot construction. Site is near the CNM, but across Kearney Road.
4	Southeast corner of Kearny and Bluff Roads	<ul style="list-style-type: none"> Stormwater runoff drains to the north. Stormwater runoff could be pumped to the south. 	<ul style="list-style-type: none"> Proposed location for the CNM parking lot. Most convenient site for the CNM.

Site 4 is the proposed location of parking for the CNM. To address the concern of quality of stormwater runoff flowing into Wetland 302 from this site, several engineering approaches were evaluated. At this site, drainage could either be directed into Wetland 302 without control, collected and pumped to drain south, or allowed to drain into Wetland 302 through a series of bioswales. The topography of the site precludes gravity-driven stormwater drainage to the south of the CNM (Figure E.2). The lowest drainage point south of the APS site is 736 ft (224 m) above sea level requiring 1,750 ft (533 m) of drainage pipe to be laid from the proposed parking lot site. For a gravity drainage system to be effective, the CNM parking lot would have to be elevated to 757 ft (231 m). This is 13 ft (4 m) higher than the CNM building floor and the existing APS experiment floor. It would also be 20 ft (6.1 m) above the elevation of Kearney and Rock Roads (737 ft [225 m] above sea level).

Because it is of high importance to maintain and enhance the functionality of Wetland 302 for mitigation purposes, the option of draining a parking lot into Wetland 302 without further control was not analyzed in detail.

If stormwater from the parking lot at Site 4 was collected, it could be pumped and discharged at the southern boundary of the ANL-E site. This would divert water from

TABLE E.2 Environmental Parameters of Alternative Parking Sites for the CNM Facility

Parameter	Alt. 1A (SW corner of APS site, paved)	Alt. 1B (SW corner of APS site, tiered lot)	Alt. 2 (SGF area)	Alt. 3A (W of Kearney Rd.)	Alt. 3B (W of Kearney Rd.)	Alt. 4A (N of CNM)	Alt. 4B (N of CNM), <i>Proposed Location</i>	Alt. 4C (N of CNM)	Alt. 4D (N of CNM, covered parking)
Drainage	Natural drainage to south	Natural drainage to south	Natural drainage to south	Natural drainage to Wetland 302	Pumped drainage to south	Natural drainage to Wetland 302	Pumped drainage to south	Drainage through bioswales to Wetland 302	Natural drainage to Wetland 302
Air Quality	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction	Dusts during construction
Soils	Area of disturbed soils	Area of disturbed soils	Area of disturbed soils	Poor drainage; undisturbed soils	Poor drainage, undisturbed soils	Area of disturbed soils	Area of disturbed soils	Area of disturbed soils	Area of disturbed soils
Surface water quality	NPDES Permit revision required	NPDES Permit revision required	NPDES Permit revision required	Salts and other pollutants drain to wetland	NPDES Permit revision required	Salts and other pollutants drain to wetland	NPDES Permit revision required	Salts draining to mitigation wetland, other pollutants reduced	Sweeping needed to avoid salts and other pollutants entering mitigation wetland
Surface water quantity	No change	No change	No change	No change	Increase runoff to south, decrease runoff to north	No change	Increase runoff to south, decrease runoff to north	No change	No change
Land Use	Conflict with future facility avoided by siting	Conflict with future facility avoided by siting	Conflict with future facility	Area designated for future programs	Area designated for future programs	No conflict	No conflict	No conflict	No conflict

TABLE E.2 (Cont.)

Parameter	Alt. 1A (SW corner of APS site, paved)	Alt. 1B (SW corner of APS site, tiered lot)	Alt. 2 (SGF area)	Alt. 3A (W of Kearney Rd.)	Alt. 3B (W of Kearney Rd.)	Alt. 4A (N of CNM)	Alt. 4B (N of CNM), <i>Proposed Location</i>	Alt. 4C (N of CNM)	Alt. 4D (N of CNM, covered parking)
Biota and wetlands	Create or enhance small wetland off- site, area of lawns	Create or enhance small wetland off- site, area of lawns	Create or enhance small wetland on-site or off-site, area of lawns	May impact wetlands, meadow, or wooded habitats; salt and contaminant impacts to Wetland 302 possible	May impact wetlands, meadow, or wooded habitat	Area of lawns; salt and contaminant impacts to Wetland 302 possible	Area of lawns; salt and contaminant impact to Wetland 302 avoided	Area of lawns; reduced potential for salt and contaminants to impact Wetland 302	Area of lawns; reduced potential for salt and contaminants to impact Wetland 302
Cultural Resources	None	None	None	Present in area	None	None	None	None	None
Health and Safety	Long walk to CNM, hazardous in hot or winter weather	Long walk to CNM, hazardous in hot or winter weather	None, with entrance to rear of CNM	Low risk with Kearny Road crossing	Low risk with Kearny Road crossing	Very low risk at front entrance of CNM	Low risk from uneven lot surfaces	Low risk from uneven lot surfaces	Very low risk from winter or wet weather
Aesthetics	Trees may remain near CNM entrance; parking lot visible from off-site recreation areas	Trees may remain near CNM entrance; parking lot visible from off-site recreation areas	Trees may remain near CNM entrance	Trees may remain near CNM entrance; adjacent natural area replaced with parking lot	Trees may remain near CNM entrance; adjacent natural area replaced with parking lot	Parking area design integrated with building entrance	Parking area design integrated with building entrance	Parking area design integrated with building entrance	Parking area design integrated with building entrance

Wetland 302, but also would carry salts and other pollutants away. A significant amount of paved area adjacent to the CNM must remain at the floor level (744 ft [227 m]). Roadways and delivery, loading, and pedestrian walkway locations would still remain since there is no practical way to drain these areas to the south.

A covered parking area was briefly considered for Site 4, but this alternative was not analyzed in further detail because of cost and the necessity of administrative controls to remove parking lot pollutants by mechanical means. To increase cost effectiveness, covered or tiered parking was also considered for Site 2, where there is space for additional parking for other future facilities.

In summary, considering the characteristics of potential parking lot site location, this EA analyzes in further detail four alternatives: Site 1-Option A, Site 1-Option B, Site 4-Option B, and Site 4-Option C (see Table E.2 for descriptions).

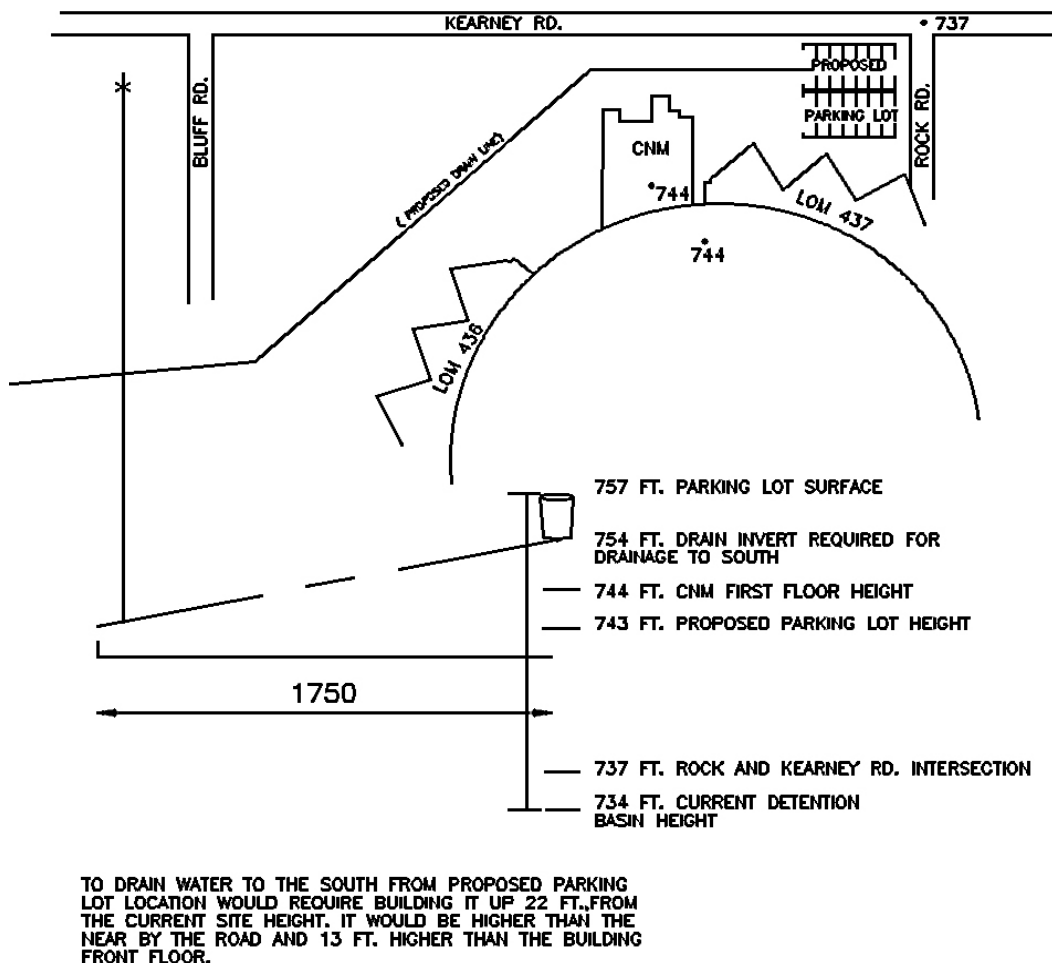


FIGURE E.2 Surface Elevations Associated with Stormwater Drainage Alternatives